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(Paris, 13-17 June 1994)

REPORT ON THE ECE-IEA JOINT WORK SESSION ON ENERGY STATISTICS

Prepared by the ECE and IEA secretariats

1. A jointly sponsored work session of the Ad-Hoc Working Group on Energy Statistics was held in Paris from 7-8 December 1994. It was attended by representatives of: Belgium; Canada; Croatia; the Czech Republic; Denmark; Finland; France; Germany; Ireland; Italy; Japan; the Netherlands; Poland; Portugal; Spain; Sweden; Switzerland; The Former Yugoslav Republic of Macedonia; United Kingdom and United States. Also present were representatives from the Statistical Office of the European Union (Eurostat).

2. The conclusions reached at the Work Session are included in the Annex to this note and are presented according to the practices used at the International Energy Agency (IEA) which hosted the meeting.

3. Discussion was based on the papers presented in appendix 3 of the annex.

4. The meeting did not make any recommendations for further work which were different from those contained in programme element 3.12 of the integrated presentation of international statistical work programmes (CES/R.7). Hence, the latter need not be changed.

Annex

Summary Record of the Meeting of the ad hoc Working Group
on Energy Statistics
7-8 December 1993

1. Before seeking approval of the agenda Mr. Simmons, co-Chairman, welcomed delegates from the OECD and ECE countries to the meeting and introduced co-Chairman, Ms. Mikkelsen, ECE inviting her to address the meeting.

2. Ms. Mikkelsen conveyed the wishes of the new ECE Executive Secretary, M Berthelot, that the meeting be fruitful and successful. She described the enlargement of the ECE to 53 members many of which are countries in transition and qualify for development assistance. She welcomed the expansion of joint cooperation between international organisations that the meeting represented and recalled that its formal recognition within the meeting programme of the Conference of European Statisticians would mean that the current discussions would be reported to both the CES and the ECE Committee on Energy. During her address Ms. Mikkelsen drew attention to the special weight now given by the ECE to the development of renewable energy forms and welcomed the strengthening of the joint questionnaires in this respect.

3. Mr. Simmons then welcomed Messrs Pauwels and Tavoularidis from Eurostat and briefly introduced the staff of IEA Energy Statistics Division.

Agenda Items 1 and 2: Approval of Agenda and Purpose of Meeting

4. The meeting approved the draft agenda and Mr. Simmons spoke briefly about the purpose of the Working Group. He declared it to have two main aims. Firstly, to seek comments on the draft questionnaires circulated to national administrations in order to finalise them following the meeting without need for additional clearance from administrations. Second to discuss the collection of statistics of co-generation and renewable energy forms in order to encourage and improve data collection in these areas.

Agenda Item 3: Statistics on Combined Heat and Power

5. There was general agreement to the changes in the terminology on electricity and heat proposed on this agenda item in Working Paper 2.

6. Participants sought clarifications on the relationship between the terms "Conventional Thermal" and "Co-generation" (Spain) and the classification of "Block Heating Plants" (plants less than 1MW, sometimes using co-generation to supply heat/electricity in or to the residential sector) in autoproducer or public. (Germany).

7. The meeting considered the problem of apportioning fuel inputs in a CHP plant to the electricity and heat outputs and asked the Secretariats, jointly, to provide guidance to Member countries on a suitable methodology taking into account work done by UNIPEDE on this issue. The methodology is to be included in the 1994 questionnaires. A note prepared jointly by the Secretariats is Appendix 1. The Chairman invited participants to provide comments on the proposed methodology presented in the attached note.

8. A discussion of the proposed IEA convention whereby a plant with only one CHP unit but several heat or power units would be classified as a CHP plant led to an agreement that where possible countries would report fuel inputs and electricity/heat outputs on a unit basis rather than plant basis. Countries without unit detail would report according to the proposed definitions and would, as opportunities permitted, work towards reporting data on the unit basis. The meeting considered that if countries move to a unit basis for reporting electricity and heat statistics it was essential that input and output data be reported in a consistent manner in the questionnaires. The reporting instructions would be changed to reflect this agreement.

Agenda Item 4: Renewable Energy Statistics

9. The meeting considered it important to extend the coverage of data collected in the joint questionnaires on renewable energy sources and generally welcomed the proposals for expanding the data submitted by Member countries in this area. Mr. Tavoularidis described the work that EUROSTAT had done and noted that a paper on methodology and terminology had already been published and a statistical report will be published in May 1994.

10. The meeting agreed to the approach adopted in the Secretariats' proposals to incorporate additional questions on renewables into the current four questionnaires in preference to developing a separate questionnaire. The German delegation felt strongly, however, that a separate questionnaire should be developed on renewables because of the very different characteristics of these energy forms and the sometimes imperfect competence of the relevant statistical units (coal, oil, gas) to collect and estimate these data. This should be the task of the experts in the "renewable units" of the administration. Ms. Mikkelsen noted that the proposals before the meeting were consistent with two recent decisions of the Conference of European Statisticians that additional statistical information on renewables be collected and that the number of questionnaires not be increased.

11. The meeting considered that the separation of biomass from non-biomass adopted by EUROSTAT in its work should be carried forward into the collection of renewables data in the joint questionnaires. (The definition of Biomass included in the Working Paper 4 was consistent with that used by EUROSTAT). It was agreed that the Secretariat would revise the proposal on renewables on this basis. Accordingly, the section on 'Other Fuels" on page 4 of Working Paper 4 has been

redrafted and is presented in Appendix 2 attached. Comments from respondents are welcome.

12. The meeting considered it desirable to recognise heat pumps in the questionnaires by providing means for reporting heat gathered by these machines. However, it noted the difficult methodological problems involved in correctly representing the energy flows to and from heat pumps within the energy balance without detailed knowledge of the sources of the heat gathered. Sweden noted the importance of heat from heat pumps as well as recovered waste heat and heat from electric boilers saying that these sources together contributed forty percent of the heat required for the district heating system in the country. It was agreed that the Intersecretariat Working Group would consider a means of collecting the data.

13. Several participants mentioned the difficulty in collecting statistical information on the use of renewable energy and the problems this caused in completing questionnaires. In summing up Mr Simmons said that it was recognised that the disparate forms of renewables and their uses were a handicap to simple data collection. The different data collection systems and organisational structures reflected the different emphasis placed on renewable energy in Member countries. The questionnaires had been designed to capture whatever data are available. Nevertheless, in cases where detailed information was not available countries were encouraged to provide estimates based upon surveys and research studies.

Agenda Item 5a: Electricity and Heat Questionnaire

14. The meeting sought clarification of the terms gross and net heat production. It was noted that the use of these terms in the questionnaire followed the UNIPEDE definitions. This would be made clearer in the reporting instructions.

15. Some participants indicated that they did not see the need to report gross electricity consumption. Mr. Simmons noted that gross consumption data was important for the calculation of plant efficiencies and it would be disappointing if countries were unable or unwilling to report such data.

16. Poland raised the problem of accounting for the use of supporting or "secondary" fuels and recovered heat which assist or start combustion in power stations. After discussion it was decided that oil, gas and other fuels used for start-up in a plant should continue to be reported as present, i.e., assimilated on the basis of their energy content, with the main fuel entering the boilers.

17. Sweden remarked that limited access to operational data meant that it was not, in general, possible to record the output of electricity and heat according to the types of fuels when plants are using mixed inputs. Outputs could be calculated in proportion to the fuel inputs but this would not show the various efficiencies of the different types of fuel use. It was also remarked that the use of electricity for the production of district heat from electric boilers

should be recorded in the transformation sector. Mr. Simmons agreed to consider the problem of allocating multiple fuel inputs to the two outputs with the IWG.

Agenda Item 5b: Oil Questionnaire

18. The proposals for Ethane and Orimulsion were briefly discussed. It was explained that, in the past, statistics of ethane from NGL separation plants were combined with those for LPG thereby obscuring supply information of interest to users of the data. The new proposal enabled ethane supply and consumption to be distinguished. Use of Orimulsion was to be reported with Bitumen because its current use does not merit a separate column, it is a suspension of bitumen, and to place it with fuel oil (its nearest competing oil product) would confound the consumption data with that for fuel oil. In contrast the use for bitumen is very different from Orimulsion use enabling the separate uses to be distinguished.

19. The meeting agreed with the changes necessary to accommodate the increasing use of oxygenates and additives in motor fuels. In the discussion the following points were made. Certain of the additives were derived from oil products so some, inescapable double counting was taking place. It was suggested that an additive/oxygenate column be added to the Table 2 of the questionnaire to accommodate the imbalances in the flows of these products between refineries and stock changes. However, the complications of ensuring accurate reporting without opening the report to an account of the many internal flows of unfinished products were seen as the disadvantages of the proposal.

20. Discussions of the reporting of flows of oils to and from the petrochemical industry revealed doubts that it could account for deliveries of motor gasoline made by the industry to final consumers. Mr. Simmons undertook to examine this concern within the IWG and, if necessary, modify the proposal to meet the requirement.

21. The meeting agreed that little could be done to advance materially on the current level of reporting for international bunker fuel use. Certain participants commented that, in the case of marine bunkers, attempts to identify deliveries to national flag carriers as a means of isolating oil used for national income purposes were misconceived as national ship owners registered their vessels in various countries for financial reasons. During the discussion it also appeared that the basis for the collection of international marine bunker deliveries could lead to some misreporting of oil use for deep-sea fishing as bunker deliveries rather than consumption by the "Agricultural" sector.

Agenda Item 5c: Natural Gas Questionnaire

22. Several producing countries said that they would be unable to provide the desired separation of vented from flared natural gas. The UK felt that providing the data in heat units would pose a problem. Mr. Simmons said that the questionnaire would remain as proposed as the non-provision of the data would not affect the gas balance.

Agenda Item 5d: Solid Fuels, Wastes and Manufactured Gases Questionnaire

23. In reporting on the working paper circulated to Member countries on this agenda item, Mr. Savage said that three changes were proposed for this questionnaire. Two of them flowed from the changes to the terminology used for electricity and heat and revisions to the collection of data on renewables. The other change concerned the collection of data on fuel used in blast furnaces. As the electricity and heat terminology and renewable energy had already been discussed at length, the meeting confined discussion to the changes affecting Blast Furnaces.

24. The meeting agreed to the proposal that the actual quantities of fuels used in blast furnaces be now reported in the joint questionnaires. In previous years countries reported in the coke oven coke column the amount of coke oven coke with a heat content equal to that of the blast furnace gas reported in the questionnaire (this was referred to as the coke equivalent method). However, as increasing quantities of pulverised coal injection (PCI) coal are being used in blast furnaces, it has become important to know the actual quantities of coal (as PCI) and coke used. The methodological issues concerning the presentation of the data in the energy balance would be examined by the IWG.

25. Ms. Mikkelsen noted that the ECE Experts on Coal Trade, Statistics and Transport, in their meeting in Vancouver in September 1993, had requested that data on PCI be collected.

Agenda Item 6: Annual Questionnaire Submission

26. A **"tour de table"** revealed that the scope for bringing forward the completion and return of the questionnaires was very limited. For the majority of countries the most realistic return-by date would be the end of August each year. The prospect existed of a faster completion and return of the electricity and heat questionnaire but the need for consistency between this questionnaire and the others limited the possibilities for its earlier submission.

27. Mr. Simmons encouraged delegates to do all they could to exploit electronic means of questionnaire submission. He mentioned, specifically, the X400 e-mail system currently used by several member countries. The IEA's Questionnaire Preparation Facility will also be available for the input, verification and output file preparation tasks. Its facilities are currently being greatly improved and extended and should be completed by end January 1994.

Agenda Item 7: Any Other Business

28. Mr. Simmons reminded delegates that ISIC Revision 3 and NACE (91) would be employed for the first time in defining the economic activities for the collection of 1993 fuel use data. A number of delegates had made suggestions for changes to the definitions proposed in the questionnaire and these were to be very largely incorporated.

29. In response to a question concerning the concordance between the trade origins and destinations used within the Annual Oil Questionnaire and the Monthly Oil Questionnaire that the present differences on trade and other matters between the questionnaires would remain until the annual questionnaire had been proven. At that point the SEQ would be asked to agree implementation of similar changes to the monthly questionnaire.

30. It was agreed that the IEA Secretariat would circulate the IEA member country data contact points for each of the questionnaires to the meeting participants as a means of facilitating greater communication between statisticians.

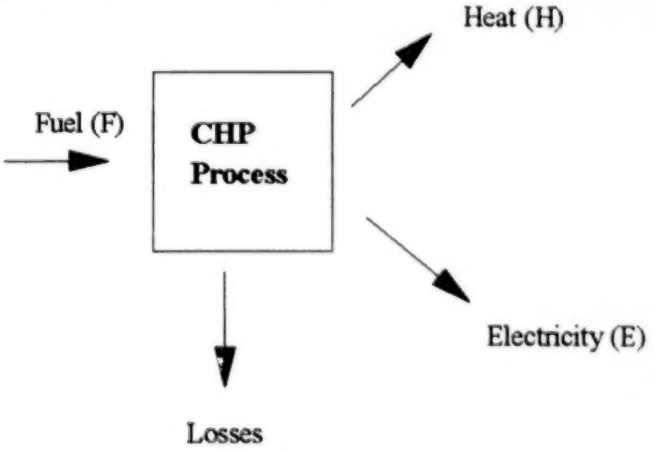
31. Ms. Mikkelsen said that the CES would probably arrange an Energy meeting in 1995 at which the relationship between energy and environment and priority projects in transition countries could be topics.

32. Mr. Simmons thanked all participants, Ms. Mikkelsen and colleagues from Eurostat for their support and constructive comments and closed the meeting at 11h00 on the 8th December.

Appendix 1

33. At the circulation of the first draft of the summary record a number of meeting participants sought clarification of the definition given below. It is hoped that the following provides it. It will also be helpful to specify how the international organisations see the definition used in the data collection process where local definitions are not employed.

34. The relationship between the fuel input and the electricity and heat generated in a CHP unit, without regard to the type of thermodynamic process, may be modelled simply in the diagram below.



The following relationship defining overall efficiency (ϵ) is

$$\epsilon = (H + E) / F.$$

The definition given proposes that the imputed fuel use for electricity, F_e, and (as a consequence) that for heat, F_h, are

$$F_e = F - H / \epsilon = F (E / (E + H)) ; \quad F_h = F (H / (E + H)) .$$

35. So the definition implies that the fuel input is divided between electricity and heat in proportion to their shares in the output.

36. It is assumed that the definition will be used by those close to the plants or units and providing data to the organisation responsible for the collection of national CHP statistics. The formula would be used only where an alternative method better suited to the plant does not exist.

Fuel requirements for the joint production of electricity and heat

37. The definition below has been taken from the published UNIPEDE terminology. It is conceptually simple and economical in its data requirements. The Intersecretariat Working Group for Energy Statistics recommends that it be used where local methodologies are not available.

Definition 3.2.2.3

38. Total heat consumption for the production of electrical energy in a combined heat and power station (kJ).

The "total heat consumption for the production of electrical energy in a combined heat and power station" is the heat equivalent of the fuel consumed by the plant less that supplied for external purposes when related to fuel input. For steam plant the external heat supplied should be divided by the boiler efficiency.

Appendix 2. The Reporting of Biomass and Wastes

39. Products included in the category are peat, wood, vegetal wastes, animal wastes, industrial and municipal wastes, as well as fuels derived from these solid products including sewage gas and landfill gas. Some of these products are biomass 1/ products.

40. The quantities of energy to be reported under the product categories are those obtained from the direct combustion of the fuels. For example, the heat obtained from the combustion of municipal solid waste (MSW) should be reported as the production from MSW whereas the heat obtained from the combustion of landfill gas derived from sites filled with MSW should be reported in the category landfill gas.

41. In order to classify this group of products so that data on renewable energy sources can be reported separately from non-renewable energy sources, it is proposed to divide the group of products into two main categories:

Biomass and animal products

solids:	wood; vegetal waste (including wood waste); animal materials/waste
liquids:	black liquor, animal waste; alcohols and esters (all vegetal and animal sources)
gases:	landfill gas; sludge gas (inc. sewage gas and gas from animal waste slurries)

Non-biomass products

municipal solid waste (inc. hospital waste)
industrial waste (solid or liquid)

Peat, although biomass, is not considered a renewable fuel and should be reported separately.

42. As noted above Biomass and animal products are further classified into solid, liquid and gaseous products on the basis of their physical state at the point of use and the Non-biomass products are classified as either municipal solid waste or industrial waste. Although these five sub-categories are intended to be mutually exclusive it is recognised that included in municipal solid waste will be some household wastes that are derived from biomass, such as paper and food scraps, and other non-biomass products, such as plastics. However, as it is clearly not practical to separate out these components, it is a problem that can not be avoided.

43. For the purposes of reporting data in the joint questionnaires, all of the products presented above should be reported in the **Solid Fuels, Wastes and Manufactured Gases Questionnaire** with the exception of alcohols and esters which should be reported in the **Oil Questionnaire**.

44. In the **Solid Fuels, Wastes and Manufactured Gases Questionnaire** it is proposed to group the products classified above into <u>five</u> reporting categories which would replace the <u>single</u> category of **Other Fuels** from the 1992-1993 Questionnaire. The specific products included in each of these five categories will be listed in the Reporting Instructions in the questionnaire. The five reporting categories are as follows:

Peat
Solid and Liquid Biomass and Animal Products
Gases derived from biomass and wastes
Municipal Solid Wastes
Industrial Wastes

46. In the **Oil Questionnaire** alcohols and esters should be reported as a Memo Item under the heading **From Biomass** in Table 1.

Appendix 3. List of papers presented at the meeting (available in English only)

a. The provisional agenda (Working Paper No.1).

b. Statistics on Combined Heat and Power(Working Paper No.2).

c. Renewable Energy Statistics (Working Paper No.3).

d. Proposal for the 1993 Annual Oil Questionnaire (Working Paper No.4).

e. Proposal for the 1993 Annual Gas Questionnaire (Working Paper No.5).

f. Proposal for the 1993 Annual Solid Fuels, Wastes and Manufactured Gases Questionnaire (Working Paper No.6).

g. Proposal for the 1993 Annual Electricity and Heat Questionnaire (Working Paper No.7).

NOTES

1/ Biomass refers to any plant matter used directly as fuel or converted into fuels or electricity and/or heat. Sources of biomass are diverse and include the waste of agricultural and forest product operations as well as wood, sugar cane and other plants grown specifically as energy crops.